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BOOK REVIEWS.

UNDER THE DIRECTION OF W. H. BUSSEY.

Mathematik für Biologen und Chemiker. By Professor L. MICHAELIS, Private Docent at the University of Berlin. Springer, Berlin, 1912. vii+253 pages. 7.80 Marks.

This is an interesting example of a type of text similar to the English book by Partington,[1] designed as a minimum course in calculus for students whose engrossing interest is in other than mathematical lines. It is written in clear and "easy" German, and is brought thus to the attention of the readers of the Monthly because its perusal along with other similar texts cannot fail to be of value to those who, either inside or outside the ranks of teachers of mathematics, are concerned in bringing the benefits of the study of calculus to students of general science.

In the first fifty pages the author presents a compendium of the essentials of elementary geometry, arithmetic, algebra and trigonometry; he continues with chapters treating the theory of elementary functions (coördinate geometry), differential calculus (52 pp.), integral calculus (60 pp.), Maclaurin's and Taylor's series (19 pp.), and differential equations (28 pp.). Professor Michaelis frankly adopts the infinitesimal method of exposition *ab initio*, defining dx as an infinitely small increment given to x, adding the statement that dy is similarly the differential of y and that dy/dx is the differential quotient. As a consequence of this style of treatment, the author in his derivation of the differential quotient of the logarithm is spared the logical necessity of proving (or even of mentioning) that "the limit of the logarithm equals the logarithm of the limit."

Numerous applications of calculus to mechanics and chemistry increase the value of the text, although there is little of direct application to biology, as the title would seem to suggest.

W. DEW. CAIRNS.

Tables and Formulas for Solving Numerical Problems in Analytic Geometry, Calculus and Applied Mathematics. Arranged by WILLIAM RAYMOND LONGLEY, assistant professor of mathematics in the Sheffield Scientific School, Yale University. Ginn and Company, Boston, 1913. iv+31 pages. $0.50.

The tables in this book comprise the usual four-place trigonometric and logarithmic tables, the equivalents in radians of angles measured in degrees, the natural functions of angles measured in radians, squares, cubes, square roots, cube roots, reciprocals, Naperian logarithms, and exponential and hyperbolic functions.

The formulas from algebra and elementary geometry number twenty, those from trigonometry twenty-two, while there are fifteen from plane and solid analytic geometry and eight from the calculus in addition to twenty-seven formulas for differentiation and one hundred and twenty-seven for integration.

The size of the book ($7\frac{1}{2}$ in. x 5 in.) and its well chosen material should make it popular with those dealing with computational work, especially in technical schools for which the book was primarily prepared. The typographical clearness is especially to be commended.

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[1] *Higher Mathematics for Chemical Students.* By J. R. PARTINGTON. New York, D. Van Nostrand Co., 1912.

A. L. UNDERHILL.

Society for the Promotion of Engineering Education, Proceedings of the Twentieth Annual Meeting, June 26–29, 1912, Vol. XX, Part II. Published by the Secretary, Professor H. H. Norris, Ithaca, N. Y. xxii + 508 pages. $1.25 to non-members.

This volume is a splendid example of what may be done to share with all the members of a society and with others outside the society the full benefits of the annual meetings. According to the well-arranged statistics which form the introduction, the membership of the Society numbered 1,166, while only 215 members and guests attended the Boston meeting; yet the report of the treasurer shows that with an annual fee of four dollars the budget makes possible the distribution to members of the full proceedings of the annual meetings as well as of a monthly *Bulletin.* Why may not this be done in more of our American societies than is the case at present, whether these are directly educational or not? It is at times exceedingly difficult to obtain certain papers on a given program, inasmuch as the publishing of these is scattered over a wide range of journals. This *Bulletin* by the way affords an active forum for a live and even spicy discussion of matters bearing particularly on the teaching of engineering subjects, and enables a group of members to carry on during the year an exchange of opinions and a comparison of methods which cannot at all take place with such fullness and deliberation in connection with the all too crowded programs. The practical question fairly forces itself upon our attention as to the possibility of such interchanges on the part of those interested in the teaching of mathematics. A suggestion lies close at hand. Can this be done through the columns of the AMERICAN MATHEMATICAL MONTHLY?

Another valuable feature is the animated discussions which follow the presentation of a set of papers clustering about a common topic, as witness the shorter comments and somewhat more extended criticisms in the *Bulletin* called forth by a paper on "The Teaching of Elementary Physics" by Professors Franklin and MacNutt, or the discussion following a valuable report by Professor W. T. Magruder which collates the results of an investigation of the mechanical engineering laboratories in more than twenty-five institutions in this country with regard to equipment, personnel and methods. The remarks made are always "parliamentary" and in good spirit, but are given now and again "without gloves"; and woe be to the man who has a hobby, or who expresses his opinions either immoderately or vaguely!

Aside from the articles just referred to, there may be singled out for mention papers on "The Faculty Seminar" by Professor H. H. Norris, on "The Hydraulic Equipment at the Ohio State University" by Professor Horace Judd and on "The Engineering Laboratories of the Royal Technical University at Charlottenburg, Germany" by Mr. R. R. Heuter.

The volume may be obtained directly from the Secretary of the Society.

W. DEW. CAIRNS.